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(54) **Latch Member for a Lock**

(57) A lock bolt is made of a stack of assembled metal sheets 8, 9, 10, 11. At least one of the end sheets of the stack has at least one boss 8_1 which projects through an aperture in at least one adjacent sheet 9, and is welded to a further unapertured sheet 11 by resistance welding.

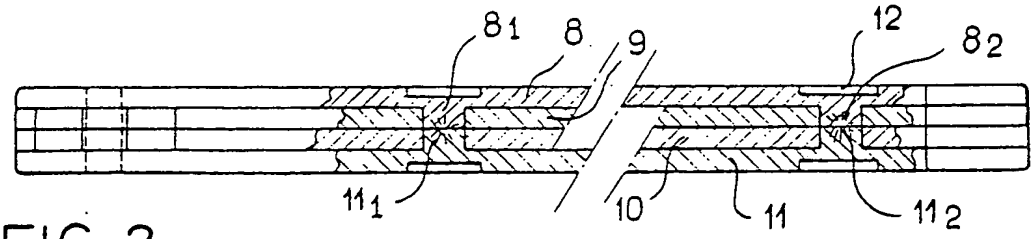

FIG_2

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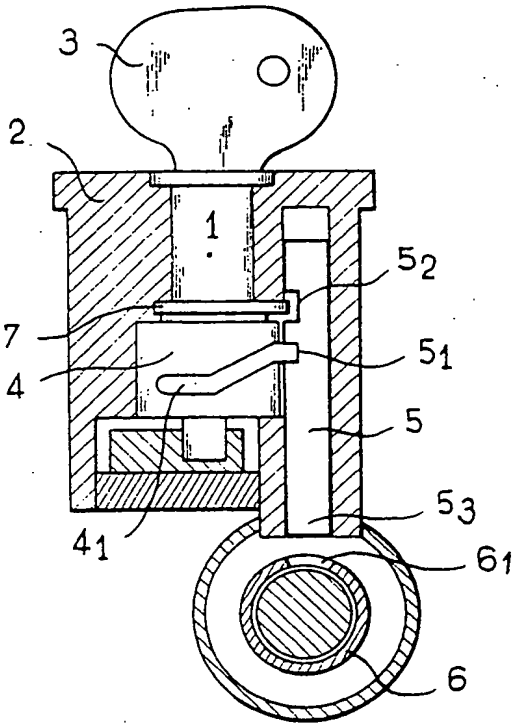

FIG_1

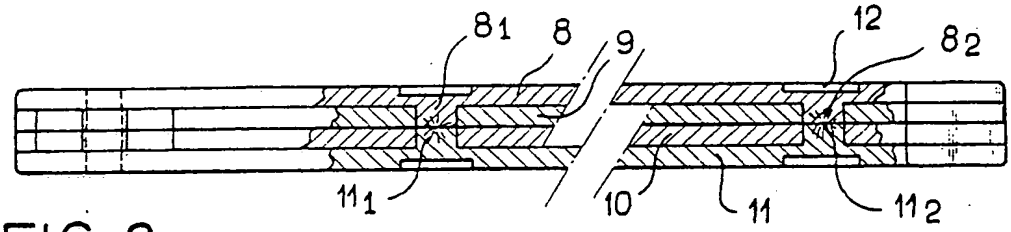

FIG_2

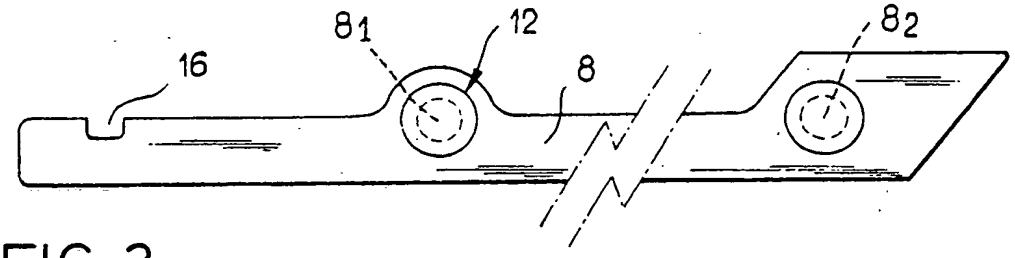

FIG_3

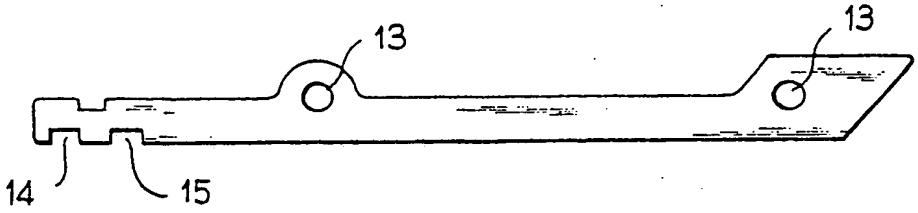

FIG_4

SPECIFICATION

Latch Member for a Lock

This invention relates to a latch member for a lock, particularly suitable for an anti-theft lock for a motor vehicle.

Lock latch members are generally formed by cutting and machining a steel bar and make it possible to produce latch members of high mechanical strength and in particular a high level of shearing strength, although such a method of manufacture is complicated, troublesome and requires particular tooling.

In order to avoid the operations of cutting and machining steel bars, it has already been envisaged that the latch members may be formed by means of a stack of steel plates or sheets which are assembled together by means of rivets. However, manufacture in this way may be employed only for latch members of relatively substantial dimensions, bearing in mind that the rivets themselves must be of substantial sizes in order to provide for a good mechanical assembly.

In addition, for this kind of manufacture, the opposite side faces of the latch member can no longer form sliding surfaces, in view of the presence of the rivet heads.

There is thus a need to overcome these disadvantages.

Accordingly the present invention provides a latch member for a lock, which latch member comprises a stack of assembled face-to-face metal sheets with at least one of the end sheets of the stack having at least one boss which is housed in a corresponding aperture in at least one adjacent sheet, the at least one boss being welded to a non-apertured non-adjacent sheet.

Preferably the two end sheets have bosses. The bosses of the two end sheets preferably are disposed opposite each other and are welded together at their abutting ends.

Advantageously the assembly welding operation is a resistance welding operation.

For a better understanding of the present invention and to show how the same may be carried into effect, reference will now be made by way of example, to the accompanying drawing, in which:

Figure 1 is a diagrammatic cross-sectional view of a motor vehicle anti-theft lock, in conjunction with the steering column of the vehicle;

Figure 2 is a side view of one embodiment of the latch member of the invention of the lock shown in Figure 1;

Figure 3 is a plan view from above of Figure 2; and

Figure 4 is an elevational view of an intermediate sheet of the stack of sheets of the latch member of Figure 2.

The aim of the present invention is consequently to provide for rapid production at low cost of a latch member of good mechanical strength, whose two opposite side faces may form sliding surfaces, which latch member, in spite of its small size, may be made in any form whatever and may have functional bosses and recesses of any shape and in any position whatever, without giving rise to complication in the manufacture thereof.

Thus, Figure 1 shows a lock whose barrel 1 is mounted rotatably in the body 2 of the lock, being rotatable by means of a key 3. The barrel 1 is also connected to an entrainment means 4 which, in the embodiment illustrated, actuates the latch member 5 by way of an inclined rib 4_1 which is housed in a recess 5_1 in the latch member.

It will be appreciated that rotary movement of the barrel 1 and the entrainment means 4 causes the latch member 5 to be so moved that its lower end 5_3 is received in an opening 6_1 of corresponding shape, provided in the steering column 6, for the purpose of locking the steering of the vehicle.

Also provided between the barrel 1 and the entrainment means 4 is a cam-shaped disc 7 which is non-rotatably fixed with respect to the barrel 1 and which, in the unlocking position of the latch member 5 as shown in Figure 1, is received in an opening 5_2 in the latch member 5. The disc 7 then forms a lock means ensuring that the latch member 5 cannot move to a position of locking the steering column 6 even if the rib 4_1 is sheared or even if the entrainment means 4 is damaged.

Other functional recesses, bosses or ribs may be provided on the latch member 5, if only for example to ensure that the vehicle is started, by way of intermediate members.

It will therefore be noted that, in particular in the case of anti-theft locks for motor vehicles, the latch member 5 is of small size and is of a shape which can be very complex, bearing in mind the bosses and recesses of precise dimensions and position which the latch member must have on its edges.

According to the invention, the latch member 5 is formed (see Figures 2 to 4) by means of a stack of metal and in particular steel sheets which are assembled together by means of spot resistance welds, the welds being made on the ends of bosses which are formed by stamping on some of the sheets of the stack.

In accordance with the present invention, the term stamping is used to denote any mechanical process which may be considered as similar in regard to the result to be obtained, and in particular semi-cutting or embossing processes, one or other of which processes may be adopted according to the nature of the material forming the sheets, according to the thickness of the sheets and the thickness of the latch member to be produced, and according to the shape and the volume of the latch member.

Referring to Figures 2 to 4,, the latch member comprises four stacked sheets or plates 8, 9, 10 and 11, the end sheets 8 and 11 of the stack each being provided with two bosses 8_1 and 8_2, 11_1 and 11_2, which are disposed in pairs opposite each other, facing towards the interior of the latch

member and passing through apertures of corresponding shape, size and position, in the two sheets 9 and 10 which are within the stack.

The latch member consisting of four sheets, the height of the bosses 8_1, 8_2, 11_1 and 11_2 corresponds to the thickness of the internal sheets 9 and 10, which is preferably equal to the thickness of the outside sheets 8 and 11.

However, any other arrangement may be employed and for example the height of the bosses of the two end sheets may be different and equally the plane in which the ends of the bosses 8_1, 8_2 11_1 and 11_2 are assembled may be disposed at a level which is different from the plane in which two adjacent superposed sheets are in contact with each other.

In accordance with the invention, assembly of the flat surfaces of the ends of the bosses 8_1, 8_2, 11_1 and 11_2 is effected by resistance welding so as quickly and easily to produce a strong assembly, without adding metal, the assembly operation being performed by means of electrodes which are pressed in to the cavities 12 formed in the end sheets so as not to change the condition of the outside surface of the latch member.

The bosses 8_1, 8_2 and 11_1 11_2 of the sheets 8 and 11 may be made either independently of the aperture 13 in the sheets 9 and 10 or in contrast they may be formed by combined stamping and cutting operations on the sheets 8 and 9 on the one hand and on sheets 10 and 11 on the other hand, the two assemblies thus produced then being placed one upon the other and secured together by spot resistance welds between the facing ends of the bosses.

The sheets 8, 9, 10 and 11 may be of identical shape, in this case the recesses 16 which are intended to co-operate with mechanical components of the lock being aligned over the entire thickness of the latch member, to form the recess 5_1.

If desired however, the recesses or ribs may be provided only on some of the sheets of the stack.

Thus, recesses 14 and 15 are provided solely on the internal sheets 9 and 10, in order to form housing means on the edge of the latch member.

Claims

1. A latch member for a lock, which latch member comprises a stack of assembled face-to-face metal sheets with at least one of the end sheets of the stack having at least one boss which is housed in a corresponding aperture in at least one adjacent sheet, the at least one boss being welded to a non-apertured non-adjacent sheet.

2. A latch member according to claim 1, wherein the two end sheets have bosses.

3. A latch member according to claim 2, wherein the bosses of the two end sheets are disposed facing each other and are welded together at their abutting ends.

4. A latch member according to any one of the preceding claims, the welding operation is a resistance welding operation.

5. A latch member according to any one of the preceding claims, wherein the or each boss is formed by stamping.

6. A latch member for a lock, substantially as hereinbefore described with reference to the accompanying drawings.

7. A lock having a latch member according to claim 1, substantially as hereinbefore described with reference to the accompanying drawings.

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